

G. R. S. IX-5]

Previous references.

File No. 377-66

1916.

Serial Nos. 1-14

(General)

Later references.

Gen. 39-187(1521)
4 152-207(1-3)

Preserve

GENERAL AND REVENUE SECRETARIAT.

Serial Nos.

Part B for

April 1917

SUBJECT.

Invention for 'Improvements in the Storage and utilization of energy by means of liquids' by Messrs: Gognou Constan Kinesco and Walter Haddon.

Sl. 13)

To the Chief Engineer J. G. of Edm., and
Superintendent, Govt. Museum.

No. G. 13992-4d/ 17-4-1917

Forwards for record a copy
of the specification of the above
invention.

257/17

GENERAL AND REVENUE SECRETARIAT.

(*fru.*)

NOTES.

5726

File No. 377-16

FILE HEADING.

Invention for 'Improvements in the storage and utilisation of energy by means of liquids' by Messrs Gogn Constantinesco & Walter Haddon.

From

Messrs H.V. Williams & Co, Calcutta

No. 3441-C

Dated 9.12.16

Received 12.12.16

Diary No. 5726

Enclos. 5 Spare Copies.

Serial No. /

BRIEF ABSTRACT OF LETTER.

Forwards an application for leave to file a Specification of the above invention as also a Power of Attorney under which they are acting in the matter and advise remittance of Rs. 11/- to cover application & other fees.

NOTES AND ORDERS.

Drafts subtd. The application fees will be remitted to the
16/12/16 *27/12/16* *Bangalore St Treasury after the Xmas & new year holidays.*
Issue
26/30/16

Serial
No.

2

To: The D. G. of Education
No: G. 9128 of 2-1-17I do: The application ref: to in sl 1
& requests that the opinion of Mr.
E. P. Mestelpe B. Sc, may be obtained
& forwarded to this office.

3

To: The Supdt. of Stamps
No: G. 9129 of 2-1-17I do: one Rupee & a Power of Attorney
ref: to in sl 1 & requests that the
document may be impressed with
The Mysore Genl: Stamp of Rupee
one & returned to this office.Money remitted to the Treasury with challan ~~book~~ filled
up & signed by the Under SecretaryRecd
6/1/17 

4

From the Supdt of Stamps No: JB 181 of 8-1-17

Returns duly stamped the Power of Attorney sent
with the above and requests acknowledgment.

5

From the Treasry Officer Bangalore St Treasry Receipt of 8-1-17

Acknowledges receipt of the application fee ^{of Rs. 10/-} in respect of
the above invention.

Serial 4. Draft acknowledgment subd.

Recd
10-1-17 

Recd 11/1/17

6.

To the Supdt. of Stamps.

C. 2

G. R. S. III-2]

General and Revenue
Secretariat.

5997
3
Sm File No. 377 of 1916.

Serial
No.

9792 of 16-17

Acknowledged the receipt
of the Power of Attorney referred
to in Sd.

Letter no: 17321 of 31-1-17 from The P. G. of Sd.
in Mysore furnishing the opinion of Mr. E. P.
Metcalfe on the invention.

The expert opinion is favorable. Dfts. subd.

L III

30
27-2-17

24/2

Grand Member

26/2/17

18/2/17

8

To Messrs Hoque Constantines
London

11922 of 3.3.17

Authorizes them to file a specification of
the said invention.

9

To Messrs H. V. Williams
Calcutta

11923 of 3.3.17

Forwards the above for consideration to the
proper concerned.

10.

Letter no: 3441-C of 16.3.1917 from Messrs. H. V. Williams
H. V. of Calcutta forwarding the specification and three
copies of the same and requests that it may be filed.

G. R. S. III-2]

General and Revenue
Secretariat.

Gen File No. 377 of 1916.

Serial
No.

The amount of Rs 30/- received from the party on 20.3.17
will be remitted to the Treasury Separately.

Usual drafts are put up. The certificate at the
foot of the G.O. of 3.3.1917 requires signature.

22
23/3
11/11



Issue
27/3/17

11 To The Compiler

No G. 13990 of 17/4/17

Notifies the specification of an invention
ref: to Pt 10, for "Improvements in the storage
& utilization of energy by means of liquids."

12 To Mr H. V. Williams: Calcutta

No G. 13991 of 17/4/17

With ref: to Pt 1, forwards copy of the
Notification & returns the order for transmission

13 To The Chief Engineer

" D. G. of Education

" Supr. Govt. Museum

No G. 13992-4 of 17/4/17

For: to send a copy of the specification of
an invention for "Improvements in the storage &
utilization of energy by means of liquids"
filed by Messrs Gagn Constantin.

8300
9527

WD 1233—GPB—60,000—1-12-16—S.

5

G. R. S. III-2]

General and Revenue
Secretariat.

File No. 377 of 1916.

Serial
No.

14

From the Treasury Office Bangalore & Treasury

No. 25 & 20.4.17

Acknowledges receipt of the amount of fee
of a specification
respect of filing the above invention
Subd.

The Correspondence may now be filed

15

Kees
17/5/17

15

24/7/17

Kmk

No. 3441-C.

16
5126

DIARY NO.....

From

H. V. WILLIAMS & CO.,

Patent Agents & Engineers,

8/20, Esplanade East,

Calcutta,

1916-1917
SECTION <i>fu</i>
NO 377-16
(1)

GEN. & RE.
12 DEC 1916

To

The Secretary to the Government of

H. H. the Maharajah of Mysore,

General & Revenue Secretariat,

General Dept.,

B A N G A L O R E.

Dated, the 9th December 1916.

Sir,

By registered Book-post, we have the honour to forward an application for the Grant of an Exclusive Privilege by Messrs Gogu Constantinesco and Walter Haddon in respect of their invention entitled "Improvements in the Storage and Utilisation of Energy by means of Liquids".

The documents sent comprise, (1) Power of Attorney in our favour, (2) Application and Description of the invention, and (3) Three sheets of drawings.

Patents for this invention have been applied for in the United Kingdom and British India, particulars of which are set out in the Application. Neither of these Patents have yet been sealed.

By postal Money Order we remit the sum of Rs 11/- for this Application as follows:- Fee payable on application ---- 10-0-0.

Stamp duty on Power of Attorney- 1-0-0.

We have the honour to be,

Sir,

Your obedient Servants,

H.V. Williams & Co.

APPLICATION.

To

The DEWAN of MYSORE:

THE APPLICATION of GOGU CONSTANTINESCO, Engineer, of The Haddon Engineering Works, Honeyport Lane, Alperton, in the County of Middlesex, England, and WALTER HADDON, Engineer, of 132, Salisbury Square, Fleet Street, London E.C., England, for leave to file a specification under part 1 of the Inventions and Designs Regulation, 1894.

1. The Applicants are in possession of an invention for "Improvements in the Storage and Utilisation of Energy by means of Liquids"; the said GOGU CONSTANTINESCO is the inventor thereof; and to the best of their information and belief, the invention is new within the meaning of Part I of the Inventions and Designs Regulation, 1894; and no circumstance exists which, if the applicants be authorised to file a Specification and file it in accordance with that Part will disentitle them to an Exclusive Privilege thereunder in respect of the invention. An application has been filed in Great Britain under No. 17857 on the 21st December 1915 (see Illustrated Official Journal of Patents No. 1406, page 1432). An application has also been filed in British India under No. 2819 on the 27th November 1916 (see Gazette of India, Part II dated the 9th December 1916, page 2460).

2. The following is a description of the invention:-

Appeal
78

THE PRESENT INVENTION relates to a method and means for storing and utilising energy by means of liquids.

In devices for storing energy in liquids heretofore employed, especially water, the energy has been accumulated by pumping the water to a higher level against the action of gravity, or in pumping the water in such a way that it raises weights, thus accumulating potential energy in the weights, which can be utilised by allowing the water to flow, and allowing the weights to descend. Liquids have also been used in accumulators in combination with air cushions.

According to the present invention, liquids are used for the storage of energy, making use not of gravity but of the elasticity of the liquids themselves.

The invention consists in storing energy by the change of volume of liquids under pressure.

The invention further consists in the application of energy stored in elastic liquids under pressure, hereinafter called elastic energy, to the actuation of percussive machines by converting the elastic energy into kinetic energy.

The invention also consists in the use of liquids acting as springs in vehicles or for steering gears.

The invention further consists in pumping the liquid into a strong vessel of considerable relative volume, so that it is compressed and undergoes a reduction of volume, and in utilising the energy of the compressed liquid during its expansion to its initial volume.

The invention further consists in apparatus for utilising the elasticity of liquids, comprising a pump for compressing the liquid, a vessel into which the liquid is compressed, and one or more utilisers of energy which can be worked independently or together from such vessel.

The invention also consists in the improved means for storing energy in liquids and utilising such energy hereinafter described.

As it is known that water and other liquids are compressible, it will be obvious that such liquids, if subjected to a pressure, must undergo a decrease in volume, and on removal of the pressure must necessarily expand to their initial volume; and in all devices heretofore employed in which liquids are subjected to varying pressure diminution and increase of volume of the liquid itself must necessarily take place.

Heretofore, however, the increase in volume of the liquid during its expansion has not been applied to the performance of useful work.

Referring to the accompanying drawings:-

Figure 1 is a section through a pump and storage vessel constructed according to the invention.

Figure 2 is a section showing a forging hammer according to the invention.

Figure 3 is a transverse section, and

Figure 4 a section on the line 4-4, Figure 3, of a single acting engine constructed according to the invention.

Figure 5 is a section showing a ratchet motor operated according to the invention suitable for

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starting motor car engines and like purposes.

Figure 6 shows an expansion motor constructed according to the invention, while

Figure 7 is a detail view of the automatic valve of this motor on an enlarged scale.

Figure 8 shows a piercing tool constructed according to the invention.

Figure 9 shows a buffer in which a liquid is used as a resilient spring device.

Figure 10 shows an application of the invention to pile driving.

Figure 11 is a curve showing compressibility of water for different pressures.

In carrying the invention into effect as shown in Figure 1, we employ an ordinary pump a pumping liquid from an inlet pipe b closed by a valve c through the valve d to a small bore pipe e leading to the capacity f. A small capacity g is provided in connection with the pumping cylinder h. The vessels f and g are completely full of liquid and the vessel f is of considerable volume relatively to the displacement of the pump a and this vessel being filled with liquid under high pressure will have stored in it a quantity of potential energy given by the formula

$$W = \frac{VH^2}{2E}$$

where W is the energy, V the volume of the compressed liquid in cubic centimetres, H the pressure of the liquid in kilogrammes per square centimetre, and E the co-efficient of elasticity of the liquid in kilogrammes per square centimetre. The energy so stored may be discharged instantaneously or gradually, and

W

the discharging and charging may go on simultaneously, the rate of discharge being controlled at will without interference with the charging.

The energy may be utilised in different ways. According to the form of utilisation shown in Figure 2 the outlet from the vessel f may be connected up to a suitable valve k connected through a pipe l with a space m in the reciprocating mass n of a forging hammer. The return of the hammer may be effected by the use of a spring o acting on the return of the hammer, after striking the blow by the expansion of the liquid, the valve k may be moved to the position in which the liquid in the space m can escape by the discharge pipe p.

The operation of this hammer is as follows:- When it is desired to strike the blow, the valve k is moved to admit liquid from the reservoir f to the space m for a short time. The valve may then be closed and the expansion of the liquid in the space m will drive the hammer downwards in a similar way to that in which the expansion of steam in a steam engine drives forward a piston. Work is thus performed by the expansion of the liquid and the hammer will acquire kinetic energy. On moving the valve to the exhaust position liquid will be discharged through the pipe p and the spring o will lift the hammer.

In Figures 3 and 4 a single acting engine is illustrated operating in a similar manner to an ordinary steam expansion engine. The reservoir containing liquid under pressure is connected to the pipe 1 and the flow of liquid to the cylinder 2 is controlled by the valve 3 worked from an eccentric on the crank

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shaft in the usual steam engine manner. The exhaust from the cylinder 2 takes place through the exhaust pipe 4. The piston of the engine is formed as a rod 5 connected to a guide 6 which is connected to the crank by the connecting rod 7, thus driving the shaft 8. A suitable balance weight 9 may be provided. On admission of the pressure to the inlet pipe the engine will operate in a manner exactly analogous to that in which a steam engine operates. A suitable maximum pressure in the cylinder 2 would be about one thousand atmospheres.

The invention is specially applicable to machines requiring very high instantaneous forces, produced by a prime mover of small relative size. The energy of the prime mover may be accumulated as potential energy by compressing the liquid in a suitable reservoir, and the energy thus accumulated may be utilised by a sudden discharge of the liquid behind the piston or other suitable device.

In the form of the invention shown in Figure 5 the energy stored in the reservoir of compressed liquid is employed to operate a ratchet motor such, for instance, as can be used for starting motor car engines or stationary internal combustion engines, or like uses. In this motor the inlet 11 is connected to the reservoir containing compressed liquid through a three-way cock as shown in Figure 2. The piston 12 is formed with a guide 13 at its lower end, which is connected by a connecting rod to an oscillating arm 14 carrying a pawl 15 adapted to engage with a toothed wheel 16 on the shaft to be driven. A spring 17 is provided to return the piston to its upper position when the three-way

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cock is in the exhaust position. Any type of ratchet may be employed.

Figures 6 and 7 show an expansion motor having an automatic valve and adapted to run in either direction. Liquid under very high pressure, for example oil at a pressure of 1,500 kilogrammes per square centimetre, is admitted to the controlling valve 21 through the pipe 22 and the liquid discharged from the engine escapes by the pipe 23. The valve 21 controls the admission of the high pressure liquid to the cylinder 24 provided with a piston 25 connected to a guide 26 and to the engine crank shaft in the usual manner. When the piston 25 touches the projecting end 27 of the valve and compresses the spring 28, the high pressure valve 29 is opened and liquid from the high pressure pipe 22 passes into the cylinder 24 through apertures in the sides of the part 27. Immediately the piston 25 moves downwards under the high pressure in the cylinder the valve 29 closes and the liquid in the cylinder 24 expands forcing the piston 25 downwards until the pressure has dropped sufficiently to allow the coned valve 30 to open under the action of the spring 31. This should occur when the piston 25 has reached its lowest position. During the return of the piston 25 the valve 30 remains open and the liquid displaced is discharged through apertures 32 or a suitable discharge pipe 23. The piston in rising comes into contact again with the projecting end 27 of the valve and through the spring 28 closes the valve 30, the spring 28 being much stronger than the spring 31 to enable this to occur. After a short interval the piston again opens the high

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pressure valve 29 admitting the pressure so that the downward stroke of the piston is repeated. This motor can be run in either direction.

At starting, the high pressure line 22 must be shut off from the high pressure and open to atmosphere by a suitable three-way cock and under these conditions the flywheel of the motor can be rotated until the piston 25 opens the valve 29. By then turning on the pressure to the line 22 the motor would then start in one or the other direction according to which side of the dead point the connecting rod happens to be situated.

It will be seen that several energy utilising devices can be worked from a single reservoir supplied by a single pump.

A safety device for a plunger pump may be constructed without the use of any safety valve. To effect this we place a vessel full of liquid in permanent communication with the cylinder of an ordinary hydraulic pump, the vessel being of such size that the displacement of the piston does not produce more than a certain predetermined pressure even if the delivery valve is closed. Such a device automatically ensures the safety of the pump, as on the return stroke the pump cylinder is filled by the liquid expanding from the vessel and no fresh liquid will pass into the pump from the suction pipe. It follows, therefore, that if all the machines operating on the power line are shut off, the only energy expended by the prime mover is in overcoming friction; for instance, in Figure 1 the vessel g would operate in this manner if the outlet from the pump to the pipe e were closed. The energy stored in the vessel during the outstroke of the piston will be returned to the piston

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on its instroke so that no loss of power occurs. The liquid employed may be water, oil, paraffin, alcohol, ether or other liquids, but we prefer to use lubricating oil in cases in which leakage is not likely to occur. Water may be employed in cases in which the exhaust liquid is not to be returned to the pump. Any liquid mixtures may be employed and thick grease or vaseline, or jellies, may be used in special cases.

Another example of the application of the invention is shown in Figure 8. In this example a piercing tool is illustrated adapted to pierce a plate 41. The piercing tool 42 is formed on or attached to the end of a piston 43 working in a cylinder 44 to which high pressure liquid can be admitted through the valve 45, provided with discharge holes 32 as above described. No springs are provided to return the piston to its upper position and therefore the springs in the valve 45 should be relatively weak. An enlarged portion 47 is provided at the end of the piston to prevent this being shot right out of the bottom of the cylinder, which is formed with an annular tapered space 48 into which the projection 47 enters to check the piston at the end of its stroke. The piston is held in its upper position by a shearing pin 49 during the admission of the high pressure to the cylinder 44.

If desired an ordinary inlet valve may be used to which the pressure is led by a tube of very small bore. When the pressure in the cylinder 44 reaches a given value the pin 49 will be sheared and the piston will acquire kinetic energy owing to the expansion of liquid in the vessel 44, thus moving downward rapidly and causing the punching tool 42 to pierce the plate 41.

V6

The kinetic energy given to the piston carrying the tool produces a very high instantaneous pressure on the steel plate and piercing is readily effected. The plate may be held in position by any suitable means if required, but the relative size of the plate and the tool may be such that any supporting means may be dispensed with, the inertia of the plate being sufficient to allow piercing to be effected.

At the end of the stroke of the piston the small clearance between the enlarged portion of the piston and the space 48 will allow the kinetic energy remaining in the piston to be taken up in forcing liquid through the small clearance space. If desired a spring may be provided to bring the plunger back to the initial position as soon as the pressure in the cylinder has dropped, or the liquid may be trapped in an enlargement at the end of the space 48 and utilised to produce the recoil of the plunger to its original position.

Use will of course be made of the elasticity of the metal of the vessel to assist in the storage of energy but the percentage of potential energy thus obtained is small in comparison with the energy stored in the liquid.

It will be seen that the storage vessel may be of any desired shape and if a number of different devices are operated from the same store of energy the necessary volume may be obtained by coupling several vessels together by means of strong tubes.

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Figure 9 shows the application of the invention to a spring or buffer. The cylinder 51 of the spring is formed with an internal cylinder 52 in which the piston 53 works. Surrounding the cylinder there is a guide and protecting sleeve 54. In order to compensate for leakage a union is provided at 55 in permanent communication with a central storage capacity in which there is continually kept a store of liquid at the maximum pressure by means of a suitable pump.

In the case of railway vehicles this pump might be driven by the axles of the vehicle, the pump and capacity being arranged as shown in Figure 1. When the leakage around the piston 53 has allowed a certain quantity of liquid to flow out of the cylinder 51 under the forces applied to the buffer, the valve 56 is opened by the end of the piston admitting the high pressure fluid to make up the losses. Immediately the valve opens the pressure in the cylinder is made up from the storage capacity so that the liquid spring is always maintained full of liquid under a given pressure where the piston is near the bottom of its stroke. When the piston rises the valve 56 closes and the liquid in the cylinder 51 expands elastically. In this manner the force exerted upwards by the piston varies from a certain value to the maximum value which is reached when the piston is at the bottom of its stroke. The movement therefore of the piston 53 is similar to that which would be obtained if it was supported by an ordinary spring. If leakage is not likely to occur the valve 56 and the connection to the storage vessel may be dispensed with.

This result can be obtained by making the

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piston a very good fit in the cylinder For example with a piston of a diameter of two centimetres the spring illustrated can support a load varying from nothing to six tons the maximum pressure being 2,000 atmospheres. The cross sectional area of the capacity should bear such a ratio to the area of the piston that when the piston is at the bottom of its stroke the pressure of the liquid is as high as possible.

A good practical figure is of the order of 1,000 to 2,000 atmospheres or more depending on the material available for the construction of the cylinder.

It is obvious that very good quality metal having high tensile strength should be employed. If lower pressures are used the size of the apparatus must be increased and liquids of lower co-efficient of elasticity should be employed.

Leakage may be very much diminished by the use of substances such as vaseline, grease or the like.

Figure 10 shows the use of the invention as applied to pile driving buffers In this modification of the invention a cap 61 is provided fitting over the head 60 of the pile. The cap is formed with a capacity 62 which may be about $5\frac{1}{2}$ litres and in the neck of the capacity works a piston 63 compressed upwards by a spring 64. A compensating valve 65 is provided for the leakage.

The pile buffer illustrated is designed for working with a falling monkey weighing a ton and falling through a distance of four metres and the stroke of the piston 63 at each impact of the monkey is about 4 centimetres. If leakage occurs when the piston 63 descends the liquid collects in the chamber 67 and when the piston rises under the pressure of the spring 64 after the monkey is

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lifted a partial vacuum is produced in the capacity 62 and liquid from the vessel 67 enters through the compensating valve 65. The valve may be dispensed with if the fit of the piston is very good.

With a buffer constructed as above described the capacity is capable of absorbing energy to the extent of 4,000 kilogramme metres producing a pressure on the pile of 200 tons.

It will be seen that a buffer of the type described may be applied to the monkey instead of to the pile and the valve 65 may be applied to the body of the capacity. The provision of the valve in the piston, however, has the advantage that the valve inlet aperture 68 is closed when the capacity is under pressure, and if by any chance the valve has not closed properly the pressure cannot escape.

If the spring 64 is strong enough to force the piston back against atmospheric pressure the port 68 will be sufficient to operate as an automatic inlet for making up leakage and the valve 65 may be dispensed with.

It should be noted that some liquids have a very small co-efficient of elasticity when heated to certain temperatures. It should be noted also that the smaller the co-efficient of elasticity of a liquid, the greater is the quantity of energy which can be stored in a given volume at the same pressure. For example, the ethyl alcohol, the co-efficient of elasticity for pressures of about 200 kilogrammes per square centimetre at about 28° C. is 12,000 kilogrammes per square centimetre approximately, while at a temperature of 310° C. the

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co-efficient of elasticity is 240 kilogrammes per square centimetre, so that much more energy can be stored at the higher temperature. The reverse is the case with water, which has a higher co-efficient of elasticity at a high temperature. The curve at Figure 11 shows the extent to which the volume of water is contracted under different pressures at constant normal temperature.

It should be noticed that the co-efficient of elasticity of water and other liquids does not vary appreciably when gases are in solution in the liquid in small proportion, and such gases in solution produce little effect.

The invention may be applied to the storage of energy in a manner analogous to the storage of energy in electric accumulators. For instance, a volume of liquid may be compressed to a pressure of say 500 kilogrammes per square centimetre, and the energy may be utilised in reducing the pressure to say 400 kilogrammes per square centimetre. The energy so obtained can be used for actuating specially-designed motors, hammers and the like, while the capacity after the pressure has dropped to 400 kilogrammes per square centimetre can be recharged to a pressure of 500 kilogrammes per square centimetre. If a suitable liquid is used, the compression and expansion are practically isothermal, and the efficiency of the storage plant would be extremely high, much higher than the efficiency of storage of energy by compressed air.

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Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:-

1. The method of and means for applying elastic energy stored in liquids under pressure to the actuation of machines by converting the elastic energy into kinetic energy, substantially as described.

2. Improved methods and apparatus for storing energy in liquids and utilising such energy substantially as hereinbefore described with reference to the accompanying drawings.

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3. The applicants, therefore apply for leave to file a Specification of the invention pursuant to Part I of The Mysore Inventions and Designs Regulation, 1894.

Dated this 31st day of October, 1916.

Gogu Constantinesco
Walter Haddon

We, GOGU CONSTANTINESCO and WALTER HADDON, the applicants above named do declare that what is stated in this Application is true to our knowledge, except as to matters stated on information and belief, and as to those matters we believe them to be true.

Gogu Constantinesco
Walter Haddon

23

Register No. of 19
Constantinesco & Haddon.

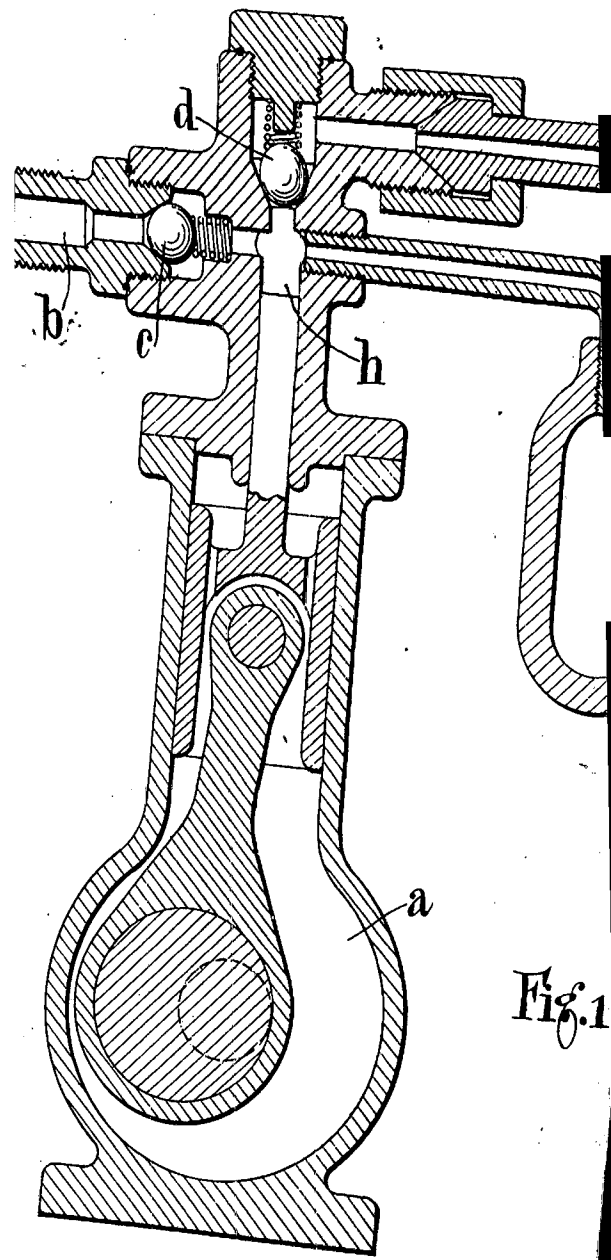
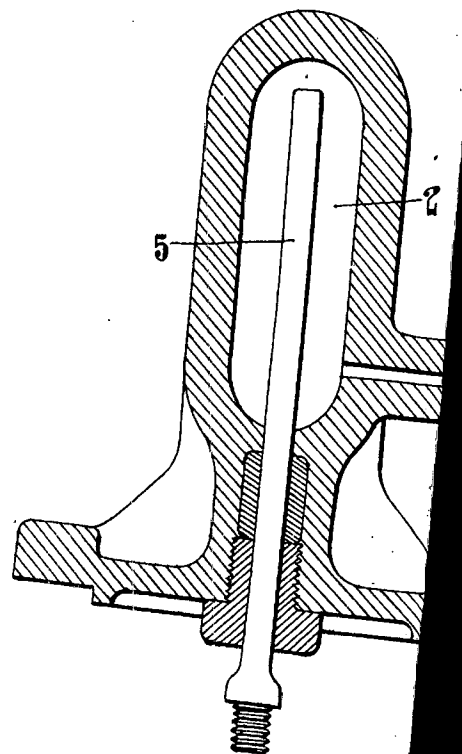


Fig. 1



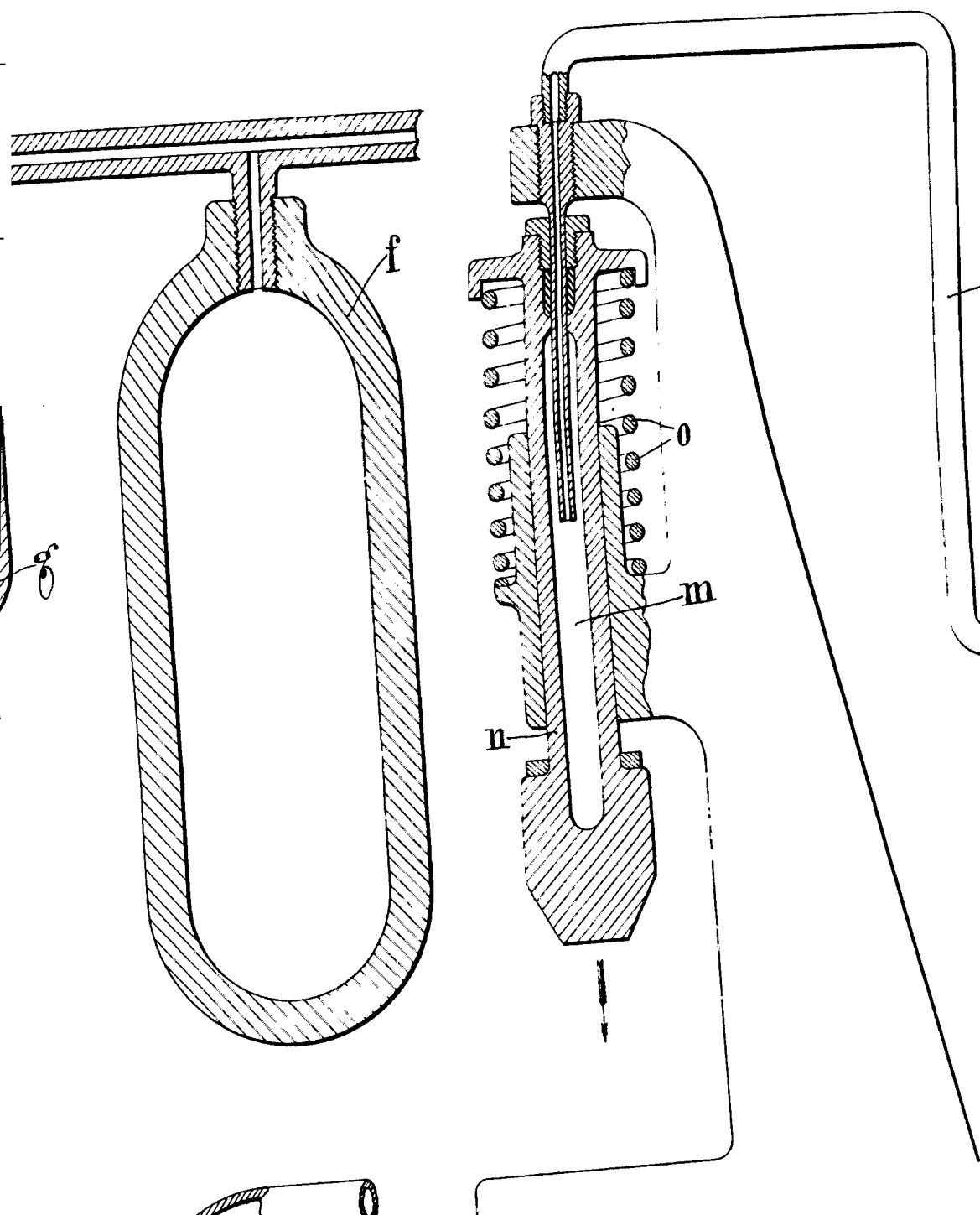


Fig. 1.

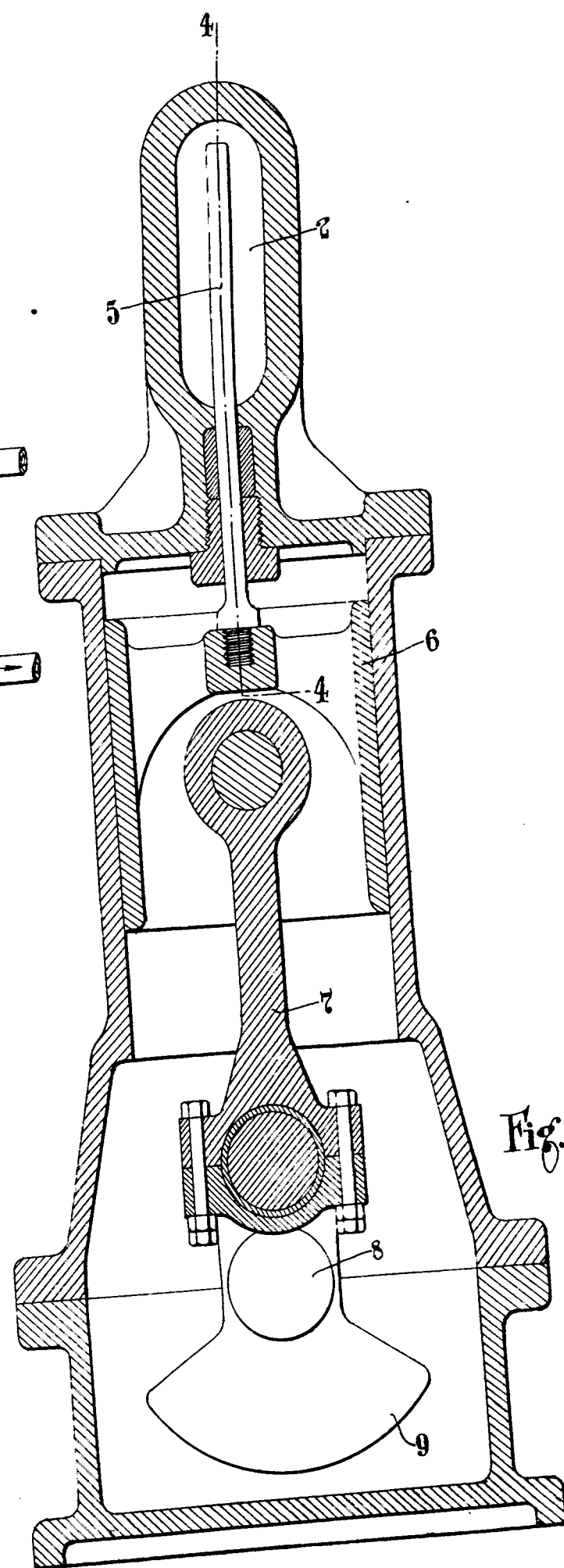
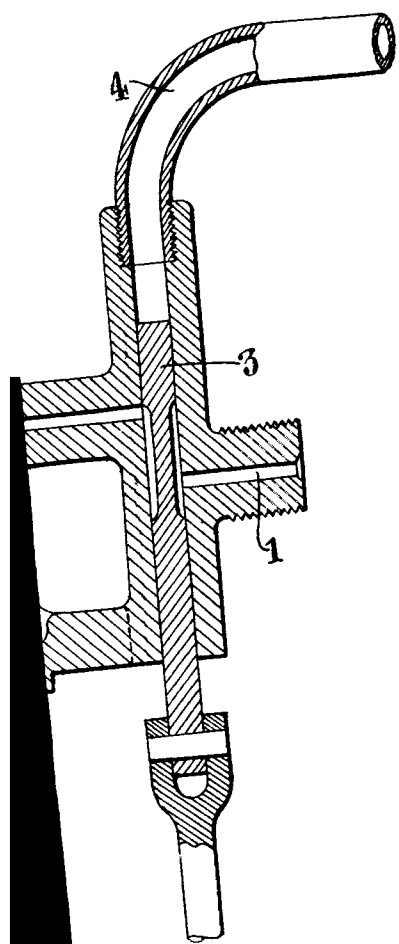


Fig. 3.

Remitter may write here any communication to the payee.
Rs. 11 - As. - Remitted as per our letter of
11/13/14. 9/16. H.V. Williams & Co. Remitter.
Patent Agents,
8/20, Esplanade, Calcutta.

To B. V.

11/13/12

11/13/12
Please see sent to The Mysore Mysore on 4-1-17

SUBJECT.....

Diary No. of letter replied to.....

Section B.1

File No. 37

Serial No. 2

General and Revenue Secretariat

, the

191

No.

G 9128
are

Date of issue

2 - 1 - 17.

To

The Dy. of Education in Mysore

Signed by

M. H. G. Aggarwal

Sir,

(X)
(to be kindly returned
with the reply)

I am directed to forward
herewith an application (X) of 31-10-16
Messrs Gogu Constantinesco &
Walter Haddm, for leave to file
a specification of an invention
for 'Improvements in the storage
and utilization of energy by means
of liquids' and to request that
the opinion of Mr. S. P. Metcalfe be
over.

20/12

Professor of Physics, Central College,
may be obtained thereon and
forwarded to this office

11/29/61

I have to
11/29/61
For Leg to full
full 32 ft

List of enclosures.

Copied by

Examined by

G. R. S. 26

SUBJECT.....

Diary No. of letter replied to.....

General and Revenue Secretariat

, the

191

Date of issue

Signed by

Mr. J. J. S. S.

Section E. 7

File No. 377-16

Serial No. 3

No.

9 9129

are present
attorney and an agent

To

The Supdt of Stamps.

Has the honor to forward herewith
a sum of Rs. 100 and a
Power of Attorney executed by Gopi
Constantinesco Engineer, Alparton
& Walter Haddon, Engineer, London
constituting
~~a favor of~~ Messrs H.V. Williams &
Co. of Calcutta as their Agents
in respect of an invention for
'Improvements in the storage and
utilization of energy by means

Yours.

J

20/12

of liquids' and to request
that the document may be
impressed with the Mysore General
Stamp of the value of Rupee
one and returned to this office

By order



For Secy to Govt
Genl Secy



List of enclosu

Copied by

Examined by

196-1917
SECTION: 4m
WD1865-BPG -400-14-4-16
377-6
4

Stamp 19]

JAN 1917
No. 16181
Enc. One

OFFICE OF THE SUPERINTENDENT OF STAMPS IN MYSORE,
Bangalore, Dated 6th January 1917. (31)

FROM

N. Krishnaswami Rao Esq., B. A., B. L.,
Superintendent of Stamps in Mysore.

TO

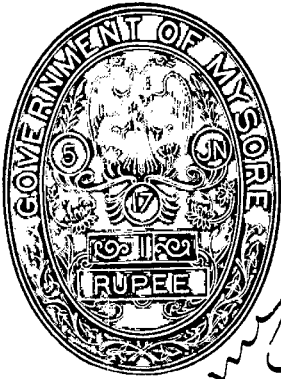
L. M. Narasinga Rao Esq., B. A., B. L.,
Secretary to the Government of,
His Highness the Maharaja of Mysore,
General Department, Bangalore.

SIR,

Referring to your docket No:
G. 9129/G. M. 377-16-3 dated 2nd
instant, I have the honor to forward
the power of attorney received with
the above duly stamped, as desired
and to request an acknowledgment.

I have the honor to be,
Sir,
Your most obedient servant,
N. Krishnaswami Rao
Superintendent of Stamps,
in Mysore.

POWER OF ATTORNEY.



IN THE MATTER of The Inventions and Designs Regulation, XI. of 1894, of the Government of Mysore:

- and -

IN THE MATTER of GOGU CONSTANTINESCO, Engineer, of The Haddon Engineering Works, Honeypot Lane, Alperton, in the County of Middlesex, England, and WALTER HADDON, Engineer, of 132, Salisbury Square, Fleet Street, London, E.C. England:

We, the above named, GOGU CONSTANTINESCO and WALTER HADDON, do hereby retain, constitute and appoint the member or members for the time being of the firm of H.V. Williams & Co, 8/20 Esplanade East, Calcutta, as our Agents and Attorneys to apply for and obtain from the Government of Mysore an Exclusive Privilege for "Improvements in the Storage and Utilisation of Energy by means of Liquids", and to maintain the same in force; and we authorise them or any one of them to sign our names to such papers and writings and do such acts regarding the same, including substitution and revocation, as may be necessary or expedient. And lastly, we request that all notices, requisitions and communications now or hereafter relating to the same may be sent to such Agents at the above address, and that they be recognised as our authorised Agents in all proceedings incident thereto.

Dated this 31st day of October, 1916.

Signed, sealed and Delivered)
by the above named Gogu Constantinesco and Walter Haddon)
at London, England, in the)
presence of :-)

Gogu Constantinesco

Walter Haddon

Frank H. Page

P. A. Deshpande

(33)

DIARY NO. 5980

6-17
SECT <i>gm</i>
FILE NO. 377-66
5

Duplicate.

(To be returned to the General and Revenue Secretariat for being placed in the file.)

1. No. 3
2. Date of Remittance 8.1.17
3. From whom received. Messrs H. V. W. Williams & Co. Calcutta
4. Date of receipt of amount in the General and Revenue Secretariat 13.12.1916
5. On what account. Application fee for leave to file a specification of an invention Messrs G. S. Chatterjee & Co. & Walter Haddad (Suff. 377-16)
6. Amount (in figures and words) Rs. 10/- ten only
7. The head to which it should be credited.

(To be filled in by the Treasury.)

[Signature]
6/1/17

for Secretary to Government,
General Department.

GEN. & REV. SEC. SECRETARIAT.
V
GEN. SEC. 1917

The above amount has been duly received and credited in the Treasury on this date.

Date 8.1.17

[Signature] Hd. Acctt. *[Signature]* Treasurer. *[Signature]* Try. Officer.

N. B.—Both the counterfoil and the duplicate to be returned to the General and Revenue Secretariat duly signed by the Treasury Department.

(24)

SUBJECT.....

Diary No. of letter replied to.....

SM Section

File No. 371

Serial No. 6

General and Revenue Secretariat

()

, the

191

No.

G 9792

Date of issue

16 - 1 - 17

To

The Supdt of Stamps

Signed by

Mr. Reg. Agar

Has the honor to acknowledge

receipt of the Power of Attorney

relating to G.M. File No. 377-16

received only stamped ^{forwarded} with ~~your~~ his

letter No. I.B. 181 of 8-1-1917.

By order

12/15

11/11/17

*For Secretary to Govt
Fed. Dept.*

15

Issued

17. 1. 17

over.

*khk
1/1*

135

Letter No.17321/677 dated the 27/31st January 1917 from
the Inspector General of Education in Mysore to the Secretary
to Government, General Department.

With reference to your letters noted in the margin

I have the honor to forward herewith copy
of letter dated the 24th instant from Mr.

E.P.Metcalf, Professor of Physics, Cen-
tral College, Bangalore giving his opinion on the applications ~~for~~
for filing the inventions noted therein

The applications are herewith returned.

(36)

Letter dated the 24th January 1917 from Mr. E. P. Metcalfe,
Professor of Physics, Central College, Bangalore, to the Inspector
General of Education in Mysore.

I have the honor to return the marginally noted patent specifi-

cations which have been sent to me for

Gogu Constantinesco & W. Hadden.

opinion. All appear to relate to paten-

Improvements in

table invention and I think that the leave

Storage & utilization of

to file them prayed for may be granted.

energy by means of liquids.

I give no opinion as regards priority.

" C O P Y "

(37)
Hms File No 377-16-8
No. 11922

GOVERNMENT OF MYSORE

General Department.

Register No. 5 of 1906-17

Bangalore, the 3rd March 1907

WHEREAS an application, dated the 31st October 1916 and received on the 12th December 16 has been submitted under Section 5 of the Mysore Inventions and Designs Regulation, 1894, by Messrs Gogu Constantinesco, Engineer of The Haddon Engineering Works, Honeywell Lane, Alpertown in the County of Middlesex England and Walter Haddon, Engineer of 132, Salisbury Square, Fleet Street London E.C., England (hereinafter referred to as "the applicant") for leave to file a specification of an invention for "Improvements in the storage and utilisation of energy by means of liquids"

And whereas the applicant has duly complied with all the requirements of Section 5 of the said Regulation;

The Government of Mysore are pleased, under Section 6 of the said Regulation, to authorize the applicant to file a specification of the said invention in accordance with the provisions of the said Regulation.

ORDERED, that the applicant be, and he is hereby, informed accordingly.

By Order of the Government of Mysore,

Draft
by

13

26/2/17
For Secretary to the Govt. of Mysore,
Gen. and Rev. Depts.

Certified that the fees prescribed in the fourth schedule to the Mysore Inventions and Designs Regulation, 1894, in respect of the application for leave to file the said specification and of the filing thereof have been paid by the applicant, and that the specification hereinbefore described has been duly filed in accordance with the provisions of Section 8 of the said Regulation on this the 2nd day of March 1907.

Draft

14/4
For Secretary to the Govt. of Mysore,
Gen. and Rev. Depts.

(Section 8 of the Inventions and Designs Regulation, 1894.)

8. (1) If within six months from the date of an order under Section 6, Sub-Section (1), or within such further time, not exceeding three months, as the Government of Mysore, in its discretion, may, on cause shown to its satisfaction and on payment of the fee prescribed in that behalf in the fourth schedule, see fit to allow, the applicant causes a specification of his invention to be filed in manner by this Part required, and the fee prescribed in the fourth schedule in respect of the filing of the specification to be paid, the applicant shall, subject to the other provisions of this Part, be entitled to the exclusive privilege of making, selling and using the invention in the Territories of Mysore, and of authorizing others so to do, for a term of fourteen years from the date of the filing of the specification.

(2) But an exclusive privilege in respect of an invention of a new manufacture shall, notwithstanding anything in Sub-Section (1), cease, if the inventor fails to pay, within the time limited in that behalf by the fourth schedule, any fee prescribed in that schedule in respect of the continuance of the privilege.

(3) If, nevertheless, in any case, by accident, mistake, or inadvertence, an inventor fails to pay any such fee within the time so limited, he may apply to the Government of Mysore for an enlargement of the time for making the payment.

(4) Thereupon the Government of Mysore may enlarge the time accordingly, on payment of the fee prescribed in that behalf in the fourth schedule, and subject to the following conditions, namely :—

- (a) the time for making a payment shall not in any case be enlarged for more than three months ; and
- (b) if any suit is instituted in respect of an infringement of the exclusive privilege committed after a failure to make a payment within the time limited for the making thereof and before the enlargement of that time, the Court disposing of the suit may, if it thinks fit, refuse to award or give any damages in respect of the infringement.

(39)

G. R. S. 26]

File No. 3

Serial No. 0

Diary No. of letter replied to

No. g 11923
me

General and Revenue Secretariat

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the 191 .)

To

Messrs. H. V. Williams & Co.,
Patent Agents & Engineers,
8 Esplanade East
Calcutta

Date of issue..... 2nd March 1917

Signed by Mr. H. G. Dujar

Gentlemen,

With reference to your
No. 3441-C
letter dated 9.12.1916, I am directed to
forward herewith ~~COPIES~~ G.O. No. g 11922
dated 3.3.17 authorizing Messrs.
Gogu Constantinesco & Walter Hadden
of England to file a specification of
an invention for "Improvements in the
storage & utilisation of energy by
means of liquids" and to request
over.

SUBJECT.

3/13

that the fact may be communicated
to the parties concerned.

1/2
187.

Shaw
16/2/21
F. L. S.

1/2

List of enclosures

Copied to

Examined by

No. 3441-C.

From:

H. V. WILLIAMS & COMPANY,
Patent Agents & Engineers,
8/20, Esplanade East,
CALCUTTA.

GEN. & REV. SEC.
GENERAL
19 MAR. 1917

8300

To: The Secretary to the Government of
H. H. The Maharajah of Mysore,
General & Revenue Secretariat, 19 -16
BANGALORE.

Dated, the 16th March 1917

SECTION G.M.
377-16
SERIAL NO. 10

Sir,

With reference to your letter No. G. 11923/G.M.377-16-9 dated the 3rd March 1917, forwarding the enclosed Government Order No. G11922/G.M.377-16-8 authorizing Messrs Gogu Constantir sco and Walter Haddon to file a specification of an invention for "Improvements in the storage and utilisation of energy by means of liquids", we have the honour to forward herewith the said specification and three copies of same, and to request that the Government Order may be returned to us in due course with the certificate at foot completed.

By postal Money Order we also remit the prescribed fee of Rs 30/- on the filing of a specification.

We have the honour to be,

Sir,

Your most obedient Servants,

H. V. Williams & Co.

Registered.
Enclosures.

Cur

COUPON. The remitter may write here any communication to the payee.

Rs. 30/- As per our ^{registered} letter dated 16/7/17.

20 Branch V

Ad today 1/11

203-V

Remitter. H.V. Williams & Co.

GEN. & REV. SEC. TARIFF
C
20 MAR. 1917

101/1 GE TYPING Sec. 4 APR 1917

(13)

MYSORE GOVT, GEN. & REV. SECRETARIAT,

No. 9 13990

Dated Bangalore,

17. 4.

1907

for 377-16-11

3dbs

NOTIFICATION.

(PATENT.)

The following specification of an invention has been filed in accordance with Sections 8, 9, 10 and 11, of Regulation XI of 1894 (The Inventions and Designs Regulations) and is open to inspection at the Mysore Government Secretariat on application to the Secretary to the Government of His Highness the Maharaja of Mysore, General and Revenue Departments, and on payment of a fee of one Rupee.

By Messrs. Goga Constantinesco, Engineer of The Haddon Engineering Works, Honey Pot Lane, Alpertown in The County of Middlesex, England and Walter Haddon, Engineer of 132, Salisbury Square, Fleet Street London E.C., England

Improvements in The Storage and Utilisation of energy by means of liquids

By Order,

To

The Compiler, Mysore Gazette, for publication.

14/4
For Secretary to Govt.
Genl. Dept.

13

One
7-16-11
MUN 13/4

No. *G 13991*
fr 377-16-12
3 dpts

MYSORE GOVT. GEN. & REV. SECRETARIAT,

Dated Bangalore, *17 4* 19*17*

From

The Secretary to the Government of H. H. the Maharaja of Mysore,
General ~~and Revenue~~ Department.

To

Messrs. H. V. Williams & Company,
Patent Agents and Engineers,
8/20, Esplanade East,
Calcutta

Sir,

With reference to your letter dated *no 3441-c* *the 16th* March 1917, I am directed to forward copy of a Notification No. *G 13990* dated *17-4-1917* issued by this Government in regard to the invention filed by you under Regulation XI of 1894 (The Inventions and Designs Regulations.) and to request that the fact may be communicated to the parties concerned.

The order granting permission to file specification is herewith returned, with the certificate at foot, duly filled in and signed.

I have the honor to be,

Sir,

Your most obedient servant,

16 4-3/4/17
For Secretary to Govt.
Genl. Dept

15

Qu
7-4

File No. 377-16
Serial No. 13

Diary No. of letter replied to

No. 13992-4
re

General and Revenue Secretariat

To

()
the 191 .

- (1) The Chief Engineer of Mysore
- (2) " I. G. of Education.
- (3) " Subst. Govt. Museum

Date of issue. 17.4.1917

Sir

Signed by M. B. S. L. C. G. V.

I am directed to forward
herewith for record in your office, a copy of
a specification of an invention for "Improvements in the storage and utilisation of energy by means of liquids" filed by Messrs.
Gogn Constantinesco and Walter Haddon,
England.

U. J. 3/4/17
Shapete
For file.

over.

SUBJECT.

66

Duplicate. 9527

(To be returned to the General and Revenue Secretariat for being placed in the file.)

SECTION.

En

FILE NO.

337-16

1. No. 25

2. Date of Remittance

19. 4. 1917

3. From whom received

Messrs. H. V. Williams & Co. Patent Agents & Engineers Calcutta

4. Date of receipt of amount in the General and Revenue Secretariat

20. 3. 1917

5. On what account

being fee for filing a specification of an invention by Messrs. G. P. Constantinenco & Walter Haddon. (En. 377-16)

6. Amount (in figures and words)

Rs. 30/- Rupees Thirties only

7. The head to which it should be credited.

(To be filled in by the Treasury.)

B. S. Chakravarti

for Secretary to Government,

General Department.

The above amount has been duly received and credited in the Treasury on this date.

Date 20/4/17

M. S. Chatterjee

Hd. Acctt.

Treasurer

Try. Officer.

N. B.—Both the counterfoil and the duplicate to be returned to the General and Revenue Secretariat duly signed by the Treasury Department.